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# Science Flight Report

## Operation IceBridge Arctic 2012



**Flight:** F41

**Mission:** Northeast Ice Stream ICESat

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### Flight Report Summary

<b>Aircraft</b>	<b>P-3B (N426NA)</b>
<b>Flight Number</b>	42
<b>Flight Request</b>	12P006
<b>Date</b>	Monday, May 14, 2012 (Z)
<b>Purpose of Flight</b>	Operation IceBridge Mission NEIS ICESat
<b>Take off time</b>	11:00 Zulu from Thule Air Base (BGTL)
<b>Landing time</b>	18:40 Zulu at Thule Air Base (BGTL)
<b>Flight Hours</b>	7.9 hours
<b>Aircraft Status</b>	Airworthy.
<b>Sensor Status</b>	All installed sensors operational.
<b>Significant Issues</b>	None.
<b>Accomplishments</b>	<ul style="list-style-type: none"><li>• Low-altitude survey (1,500) of glaciers and ice sheet profiles.</li><li>• ATM, snow, Ku-band, accumulation radar, MCoRDS gravimeter, magnetometer, DMS and KT-19 skin temperature sensor were operated on the survey lines.</li><li>• Pitch maneuvers for snow and Ku-band radar calibration.</li><li>• Ramp pass at Thule Air Base for ATM calibration at 1,500 ft AGL.</li></ul>
<b>Geographic Keywords</b>	Zacharaie and 79N Glaciers
<b>Satellite Tracks</b>	ICESat 0105, 0224, 0343, 1325, 0090.
<b>Repeat Mission</b>	2010 partial.

## Science Data Report Summary

Instrument	Instrument Operational			Data Volume	Instrument Issues
	Survey Area	Entire Flight	High-alt. Transit		
ATM	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	77 GB	None
MCoRDS	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	2.1 TB	Receiver recabled.
Snow Radar	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	750 GB	None
Ku-band Radar	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	750 GB	None
Accumulation Radar	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	183 GB	None
DMS	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	107.1 GB	None
KT-19 Skin Temp.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	10.3 MB	None
Gravimeter	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	1.5 GB	None
Magnetometer	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	530 MB	None

### Mission Report (Michael Studinger, Mission Scientist)

This is a new mission, which extends the coverage of the Northeast Ice Stream along ascending ICESat ground tracks over Zacharaie and 79°N Glaciers, which will connect a combined IceBridge/ICESat time series over a very dynamic region and be useful for ICESat-2 simulation as well as science. In addition to this, we reoccupy an east-west master grid line last flown in 2010 for dh/dt purposes over the central ice sheet, and this combined with three other master grid lines over the upper Petermann catchment should help to better understand potentially widespread basal features in this part of the ice sheet.

The weather was perfect today.

### Individual instrument reports from experimenters on board the aircraft:

**ATM:** Both ATM systems worked well and collected good data along the entire line in cloud free conditions. ATM collected a total of 7.3 hours of science data with 100% coverage.

**MCoRDS:** The MCoRDS system worked well. One receiver failed and needed to be recabled during the flight.

**Snow and Ku-band radar:** The snow and Ku-band radars worked well.

**Accumulation radar:** Worked well today.

**Gravimeter:** Worked well.

**Magnetometer:** Worked well and used the SGL data logger today without problems.

**DMS:** DMS worked well.

**KT-19 skin temperature sensor:** System worked well.

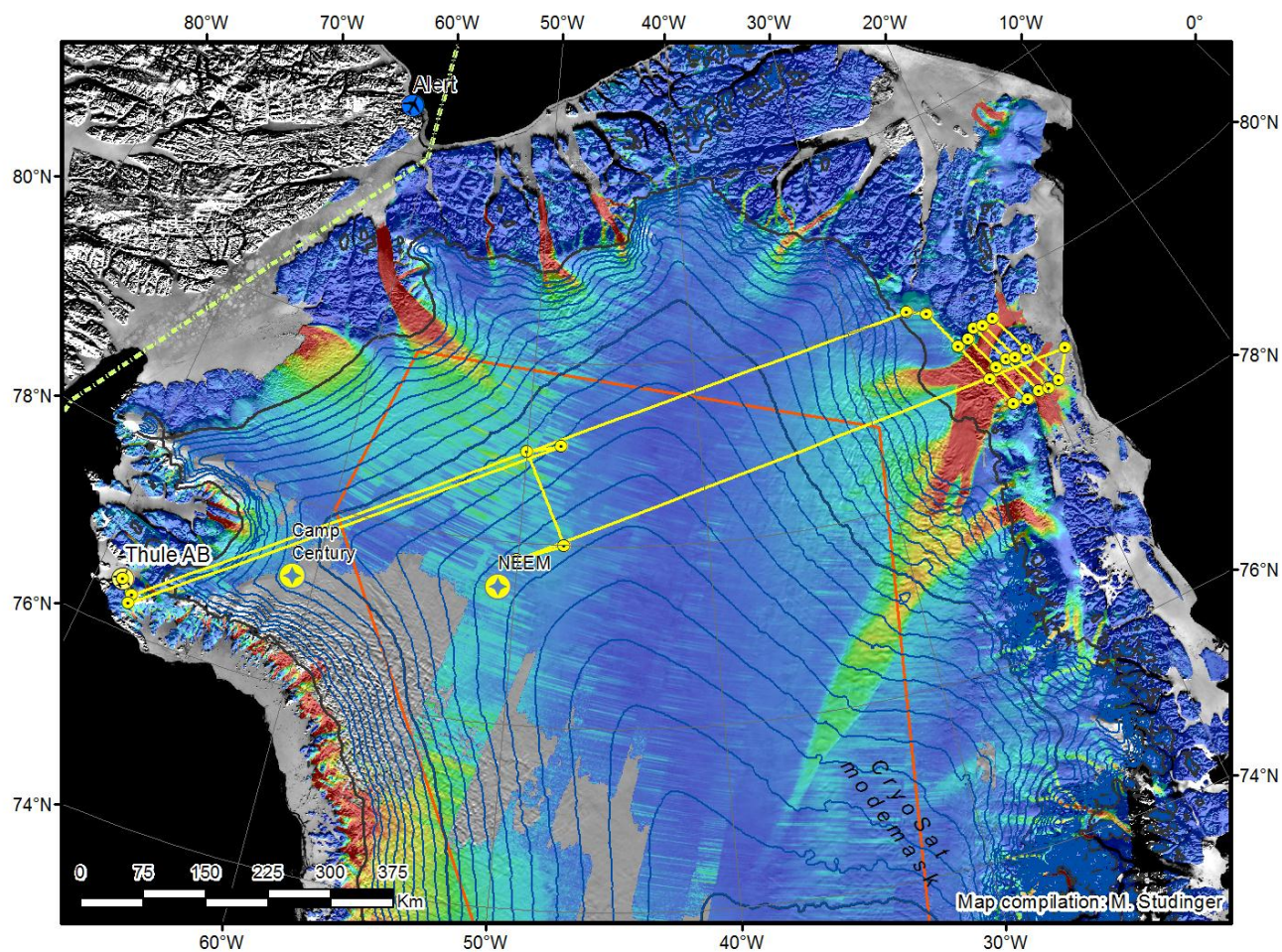


Figure 1: Today's mission plan in yellow.

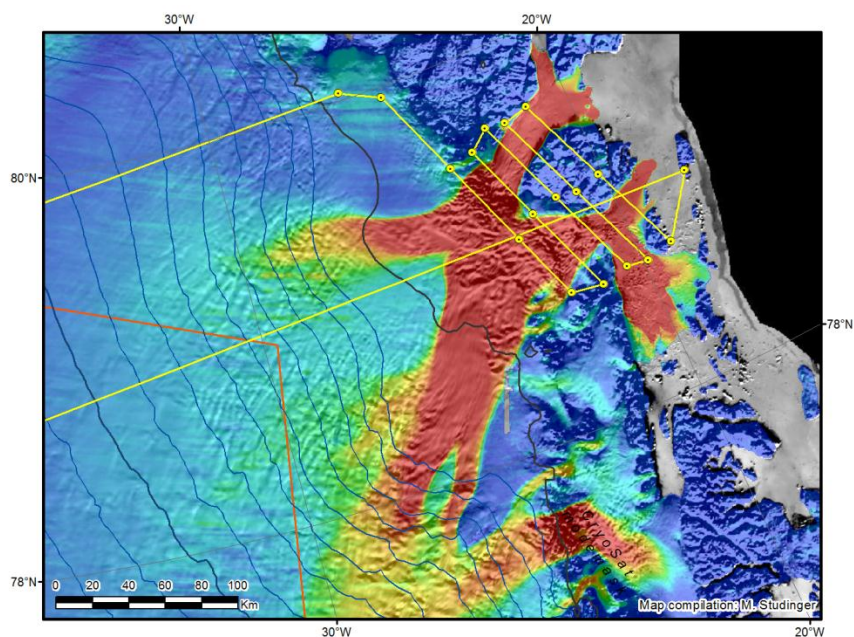


Figure 2: Detailed mission plan over the Zachariae and 79°N Glaciers.